Fruitful Alliance

JSC, minority universities harvesting research, technology for exploration

By Jovan-Justine Love

One of the greatest "untold stories" at JSC may be that of the Minority University Research and Education Program. For the past 30 years the program has been nurturing partnerships that are now bearing fruit that may be harvested for use in exploring the solar system.

Tuskegee University engineering senior Ervin Smith harvests sweet potatoes from an enclosed expandable boundary system which he helped design. Researchers at Tuskegee University are currently developing food sources that future space explores may grow on planetary outposts.

The research being performed by historically black colleges and universities, Hispanic-serving institutions, tribal colleges and universities with a significant enrollment of students with disabilities could be useful in developing food sources that future space explores may grow on planetary outposts, state-of-the-art instruments and understanding the effects of microgravity on the human body.

"Minority university faculty and student investigators are highly motivated and deeply excited to work with us in the exploration and development of space," said Dr. Kumar Krishen, JSC's chief technologist for technology transfer and commercialization. "This is an opportunity they want to explore fully. These institutions should be in the history books for the unique contributions they plan to make to lunar base and Mars missions."

Dr. Joseph Atkinson, director of the Minority University Research and Education Program, said an integral part of the JSC research effort is to build partnerships between the universities, industry and government. The MUREP program, which has existed since Congress introduced its institutional aid program for minority universities in 1965, is designed to increase the participation of minority colleges in federally sponsored space aeronautics and related technology programs.

"Over the years, the underpinning of this program has been an increase of the involvement by JSC managers and the enthusiastic interest of minority universities to participate in the NASA mission," Atkinson said.

Krishen, who has provided technical direction to the minority university program from its inception, predicted that scientifically significant results will be reported from minority universities within the next decade.

"The minority university research and technology efforts have made significant contributions including techniques for recycling resources for prolonged stays in space or on planetary surfaces, modeling of gravity and radiation effects on humans, understanding the effects of space radiation on spacecraft and monitoring of environment within the habitable areas," Krishen explained.

MUREP administers and oversees many programs that provide historically black universities with funding for undergraduate, graduate, doctoral and post doctoral student research and education. The Women in Science and Engineering program of Spelman College and the Ronald McNair Scholars of Morehouse College are examples of the kind of programs supported through MUREP.

In addition, MUREP supported 19 principal investigators who conducted individual research at 15 minority universities. For instance, MUREP helps local minority universities such as Texas Southern University with Dr. Sunday Fadula's Microgravity and Sickle Cell Anemia research. Sickle cell anemia is a genetic disease found in the red blood cells. It mainly affects the black population of this country. Fadula has designed a new drug that promises to prevent the sickling process from occurring. The university's research is centered around testing the new drug for future use.

High-energy cells and batteries is another research project supported by the MUREP program at JSC. This research has the potential to be of significant benefit to an entire range of JSC applications with the development of engineering solutions to various fabrication problems. This research also is being conducted at Texas Southern University.

NASA has established research centers around the country designed to foster new aerospace science and technology concepts and to expand the nation's base for aerospace research and development.

Of the 14 NASA Research Centers of Excellence at Minority Institutions, JSC manages three. They are the Center for Applied Radiation and Research at Prairie View A&M University, the Tuskegee University NASA Center for Food and Environmental Systems for Human Exploration of Space and the Morehouse Medical School center called the Space Medicine and Life Sciences Research Center.

Atkinson said MUREP works to further NASA's commitment to America's minority higher education community and fosters diversity in the NASA-sponsored research community.

NASA Administrator Daniel Goldin said in an introductory brochure about the porgram that it provides inspiration, hope and opportunity to all Americans.

"A world-class space agency must be able to use the lure of discovery to promote peaceful partnerships," Goldin said. "Partnerships between nations, partnerships between government and academia, partnerships with minority universities and small disadvantaged businesses, between students, teachers and entrepreneurs."

Prairie View A&M University students Billy Jackson, front, and Erick Jackson load a diffusion furnace in the university's Center for Applied Radiation Research Facility. The center focuses on four components—research, human resource development, service, and commercialization and technology transfer.

Caroline Melnado examines cultured cells under a phase contrast microscope for image analysis at Morehouse College's Space Medicine and Life Sciences Research Center. Morehouse College is developing an infrastructure for space medicine and life science research that will help NASA understand the effects of microgravity on the human body.

Photos courtesy
Tuskegee University, Morehouse College, Prairie View A&M University